

**In The United States Patent and Trademark Office**

In re Application of: Jaffee

Art Unit: 1794

**Serial No. 10/718,007**

Case Docket No. 7237

Filed: November 20, 2003

Examiner: Matzek, Matthew D.  
March 4, 2010

**For: Tough, Flexible Mats**

Commissioner of the Patents & Trademarks  
Alexandria, VA 22313-1450

Dear Sir:

This appeal is from the Final Office Action mailed on August 13, 2009, an Advisory Action mailed November 9, 2009, rejecting claims 51-64, 71-84, 91-94 and 99, set forth in the Claims Appendix of this brief, and Notice of Non-compliant Brief mailed February 25, 2010.

**AMENDED APPEAL BRIEF**

**I. Real Party In Interest:**

The real party in interest is Johns Manville, assignee of the inventor, Jaffee.

**II. Related Appeals and Interferences**

NONE

**III. Status of the Claims**

Claims 1-50, 65-70, 85-90 and 95-98 having been cancelled earlier, the final rejection of claims 51-64, 71-84, 91-94 and 99 under 35 USC 103(a) is hereby appealed.

**IV. Status of Amendments**

After the Final Office Action mailed August 13, 2009, a Rule 1.116 Request For Reconsideration was filed on October 15, 2009. This Rule 1.116 Request For

Reconsideration was considered, but the Final Rejection under 35 USC 103 of the appealed claims was maintained.

#### V. Summary of the Claimed Subject Matter:

The invention of independent claim 51 is a fibrous nonwoven mat having: a basis weight of 2.3 to about 2.6 lbs./sq. ft. (please see page 8, lines 9-10, Example 3, page 10, line 27 and Example 2, page 10, line 4, of the specification), a thickness in the range of about 38 to about 48 mils, please see Example 2, page 10, line 6, a Taber stiffness of at least about 50 gram centimeters, please see page 3, line 17, a high flame resistance passing the National Fire Protection Association's NFPA Method #701 Flammability Test, please page 3, lines 14-16, and unexpected tensile strength, flex and recovery properties after scoring and folding, and being suitable for use as a scored and folded fibrous nonwoven mat for vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile because of the fibrous nonwoven mat having the ability, after being scored, folded, and compressed, to spring back to the original shape and orientation, please see page 3, lines 1-5 of the specification, excellent tensile strength, flex and recovery properties, see page 3, lines 6-11, that make the mats suitable, for vertical webs spanning between an exposed mat and a backer sheet in a compressible ceiling tile, see page 3, lines 1-5 and paragraph 0122 and the last half of paragraph 0127 in the U. S. Pub. App. No. 2002002142 (No. 1 of Evidence Appendix), and comprising a blend of fibers comprising about 88 to about 92 wt. percent chopped glass fibers having a diameter in the range of about 13 to about 17.5 microns and a length in the range of about 0.7 to about 1.1 inches, see page 2, lines 17-18, page 3, lines 30-32, Example 2, page 9, lines 32-33 and Example 3, page 10, lines 19-20, page 5, lines 12-13 original claim 91, and page 5, line 14, and about 8 to about 12 wt. percent man made polymer fibers selected from the group consisting of polyester, polypropylene, nylon, PBT, polyacrylonitrile, and polybenzimidazole, see page 4, lines 22-24, Example 3, page 10, lines 20-21 and Example 2, page 9, lines 33-34, selected from the group consisting of polyester, polypropylene, nylon, PBT, polyacrylonitrile, and polybenzimidazole, see page 4, lines 26-27, the blend of fibers bound together by a binder that is at least partially cured and consists essentially of, before drying and curing, a homopolymer or a copolymer of polyacrylic acid and a polyol, with or without a polycarboxy polymer, the binder being present in the mat in an amount of about 25 +/- 5 wt. percent of the fibrous nonwoven mat, please see page 2, lines 35-36, the top of page 3 and lines 21-25 and page 6, lines 31-33.

The invention of independent **claim 91** is fibrous nonwoven mat having compositions comprising, (**highlighted** portions different from claim 51 above) a basis weight in the range of 2.3 to about 2.6 lbs./sq. ft. (please see page 8, lines 9-10, Example 3, page 10, line 27 and Example 2, page 10, line 4, of the specification), a thickness in the range of about 38 to about 48 mils, please see Example 2, page 10, line 6,

a Taber stiffness of at least about 50 gram centimeters, please see page 3, line 17, a high flame resistance passing the National Fire Protection Association's NFPA Method #701 Flammability Test, please page 3, lines 14-16, and unexpected tensile strength, flex and recovery properties after scoring and folding, and being suitable for use as a scored and folded fibrous nonwoven mat for vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile because of the fibrous nonwoven mat having the ability, after being scored and folded, and compressed, to spring back to the original shape and orientation, please see page 3, lines 1-5, excellent tensile strength, flex and recovery properties, see page 3, lines 6-11, that make the mats uniquely suitable, for connecting webs joining and spanning between an exposed facer sheet and a different backer sheet in unique compressible ceiling tiles **disclosed in U.S. Published Patent Application No. 20020020142** (see page 3, lines 1-5 Evidence Appendix). Such tile can be collapsed and compressed to a thin, flat condition, folding the strips of claimed mats, to reduce storage and shipping costs, the strips of mats springing back, please see page 3, lines 1-5, and comprising a blend of fibers comprising about **84** to about 92 wt. percent chopped glass fibers having a diameter in the range of about 13 to about 17.5 microns and a length in the range of about 0.7 to about 1.1 inches, see page 2, lines 17-18, page 3, lines 30-32, Example 2, page 9, lines 32-33 and Example 3, page 10, lines 19-20, page 5, lines 12-13 original claim 91, and page 5, line 14, and about 8 to about **16** wt. percent of **polyester fibers having a length of about 0.25 +/- 0.07 inch**, please see original claim 62, the blend of fibers bound together **with about 20 to about 30 wt. percent, based on the dry weight of the fibrous nonwoven mat, of a cured resin consisting essentially of a resin derived from an aqueous homopolymer or a copolymer of polyacrylic acid and a polyol, with or without a polycarboxy polymer, the binder being present in the mat in an amount of about 25 +/- 5 wt. percent of the fibrous nonwoven mat**, please see page 2, lines 35-36, the top of page of 3 and lines 21-25 and page 6, lines 31-33.

The invention of independent **claim 99** is a fibrous nonwoven mat having, (**highlighted** portions different from claim 51 above) a high flame resistance passing the National Fire Protection Association's NFPA Method #701 Flammability Test, please

page 3, lines 14-16, and unexpected tensile strength, flex and recovery properties after scoring and folding, and being suitable for use as a scored and folded fibrous nonwoven mat for vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile because of the fibrous nonwoven mat having the ability, after being scored and folded, and compressed, to spring back to the original shape and orientation, please see page 3, lines 1-5, excellent tensile strength, flex and recovery properties, see page 3, lines 6-11, that make the mats uniquely suitable, for connecting webs joining and spanning between an exposed facer sheet and a different backer sheet in unique compressible ceiling tiles disclosed in U.S. Published Patent Application No. 20020020142 (see page 3, lines 1-5 Evidence Appendix). Such tile can be collapsed and compressed to a thin, flat condition, folding the strips of claimed mats, to reduce storage and shipping costs, the strips of mats springing back, please see page 3, lines 1-5, a Taber stiffness of at least about 50 gram centimeters, please see page 3, line 17, **an air permeability in the range of about 500 - 700 CFM/sq. ft.**, please see page 3, lines 18-19, a basis weight in the range of 2.3 to about 2.6 lbs./sq. ft. (please see page 8, lines 9-10, Example 3, page 10, line 27 and Example 2, page 10, line 4, of the specification), a thickness in the range of about **35** to about 48 mils, please see Example 2, page 10, line 6, the fibrous nonwoven mat comprised of a blend of fibers comprised of about 88 to about 92 wt. percent of chopped glass fibers, see page 2, lines 30-32, having an average fiber diameter in the range of about **16 +/- 1** microns, see original claim 60, and a length of about **1 inch**, see Example 1 on page 9, and about 8 to about 12 wt. percent of **1.5 denier polyester fibers having a length of about 0.25 +/-0.07 inch**, see page 4, lines 22-24, Example 3, page 10, lines 20-21, original claim 62 and Example 2, page 9, lines 33-34, the blend of fibers being bound together with about **25 to about 28 wt. percent**, based on the dry weight of the fibrous nonwoven mat, see paragraph spanning page 5, lines 16-24, of a cured resin derived from an aqueous homopolymer or copolymer consisting essentially of polyacrylic acid and a polyol, with or without a polycarboxy polymer **the average molecular weight of the polyacrylic acid polymer is about 3,000 or less**, see page 2 of the spec., lines 35-36 and page 6, lines 31-33, **wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent**, see page 3, lines 7-14,

## VI. Grounds of Rejection to be Reviewed on Appeal:

A. Claims 82-84, 91-94 and 99 stand finally rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim limitation of "... comprising a blend of fibers suitable for use as the scored and folded fibrous nonwoven mat used for vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile as disclosed in published U. S. Published Patent Application No. 20020020142 filed April 23, 2001....." is said by the Examiner to be improper. The Examiner states that claims may not incorporate or incorporate by reference another publication, but instead should clearly spell out the intended structure, composition, etc. of the invention. The Examiner further states, "for purposes of examination the aforementioned claim limitation has been interpreted as an intended use limitation as it fails to provide any quantifiable guidance as to how the claimed article differs from other nonwoven mats in the same field of endeavor."

B. Claims 51-64, 71-84, 91, 94 and 99, all of the claims on appeal, stand rejected under 35 USC 103(a) as being unpatentable over Jaffee (5,772,846) in view of Arkens et al (5,661,213), for the following reasons:

a) The Examiner urges that Jaffee discloses a nonwoven glass fiber mat comprising a major portion of glass fibers and a minor portion of polymeric fibers with cross-linkable binder (abstract). The mat may be any weight but its preferred weight is from about 1.8 to about 2.2 pounds per 100 sq. ft. for use as a facer, but may also be made into other forms such as an accordion-shaped filter (col. 2, lines 20-28). The Examiner takes the position that since the invention of Jaffee may be of any basis weight and the fact that the reference also discloses that the preferred basis weight is about 2.2 pounds per 100 square feet it would have been obvious to one of ordinary skill in the art to have modified the applied nonwoven glass fiber mat to have a basis weight of about 2.3-2.6 pounds per 100 square feet based upon the desired properties of the final product and its intended use (i.e. filter, facer, etc.). Jaffee fails to teach a preferred thickness for the nonwoven glass fiber mat, but does provide a singular example that has a thickness of 31 mils (Example 2). Mat thickness, like basis weight, is chosen depending on the desired properties of the final product and said product's intended use. Therefore, it would also have been obvious to one of ordinary skill in the art at the time the invention was made to have made the invention of Jaffee with a mat thickness of between 38 and 48 mils. The applied invention can also be pleated or thermoformed to produce a variety of composites and laminates (abstract) and as such is suitable for use as a scored and folded vertical web as now claimed.

b) Jaffee's nonwoven mat comprises glass fibers with diameters of between about 9 and 20 microns, preferably 16 microns, and lengths of around one inch (col. 3, lines 8-10, 34-61). The nonwoven mat further comprises polyester fibers of 1.5 denier with lengths as low as 0.25 inches (Example 2) and acrylic binder. The binder may be present in the nonwoven mat at up to 35 weight percent of said mat (abstract) and Example 2 provides the specific value of 20 weight percent, which meets the binder level of claim 51 and Example 4 recites binder levels of 25 weight percent.

c) Example 2 of Jaffee uses a fiber blend comprising 85 weight percent glass fiber and 15 weight percent polyester fiber. The relative amounts of glass and polyester fibers is a result-effective variable affecting its strength and the degree of skin irritation caused to the invention's handlers (col. 6, lines 6-39). Consequently, absent a clear and convincing showing of unexpected results demonstrating the criticality of the claimed ratio, it would have been obvious to one of ordinary skill in the art to optimize this result-effective variable by routine experimentation. In re Antonie, 559 F. 2d 618, 195 USPQ 6 (CCPA 1977).

d) Example 2 provides for stiffness of 45 and the instantly claimed invention recites a Taber stiffness of 50. Alan Jaffee, who is also an inventor in the applied patent, has attested that while not explicitly stated the applied reference's stiffness values are in fact Taber Stiffness values with units of gram centimeters. The applied reference teaches that the stiffness value of 45 was higher than desired for a facer, however one of ordinary skill in the art at the time of the invention would have found it obvious to have modified the applied nonwoven glass fiber mat to have a Taber Stiffness of at least about 50 grams centimeters based upon the desired properties of the final product and its intended use (i.e. other than a facer). Jaffee fails to use a binder that is at least partially cured and before drying and curing comprises a homopolymer or a copolymer of polyacrylic acid and a polyol.

e) Arkens et al, relates to a formaldehyde-free curable aqueous composition containing a polyacid, a polyol and a phosphorus-containing accelerator. The composition may be used as a binder for heat resistant nonwovens such as nonwovens composed of fiberglass. (Abstract) Arkens et al, teaches nonwovens that contain heat resistant fibers such as for example, arimid fibers, certain polyester fibers, glass fibers, among others. By "heat resistant" is meant (in Arkens et al.) fibers which are substantially unaffected by exposure to temperatures above 125 degrees C. (col. 8, lines 23-31). The reference

teaches that the polyacid may be a compound with a molecular weight of less than about 1000, bearing at least two carboxylic acid groups and teaches that it may be a polymeric acid that is preferably an addition polymer formed from at least one ethylenically unsaturated monomer (such as methacrylic acid, acrylic acid, among others) (col. 3, line 45 through col. 4, lines 1-5). The reference further teaches that the polyol may be triethanolamine (col. 6, lines 1-6). The formaldehyde-free curable aqueous composition may also contain emulsifiers, pigments, fillers, colorants, wetting agents (equated to hydrophilic material), among other components (col. 6, lines 52-57). The reference teaches a nonwoven substrate made from a fiberglass fiber at 1.25 inches in length with a binder add-on of 28%.

- f) Since both references are directed to glass fiber nonwoven mats comprising heat resistant fibers (aramid, polyester, glass fibers, etc.), the purpose disclosed by Arkens et al. would have been recognized in the pertinent art of Jaffee.
- g) It would have been obvious at the time the invention was made to a person of ordinary skill in the art to modify the mats of Jaffee and provide them with the binder composition of Arkens et al. with the motivation of being able to carry out the drying and curing functions in two or more distinct steps, if desired (col. 8, lines 42-60). This process is referred to as "B-staging". The limitation of "a binder that is at least partially cured and consists essentially of, before drying and curing, a homopolymer or a copolymer of polyacrylic acid and a polyol" is met by the composition of Arkens et al. as the claimed process is the "B-staging" of Arkens et al.
- h) Although the prior art of Jaffee in combination with Arkens et al. does not explicitly teach the claimed ratio of wet tensile strength to dry tensile strength or air permeability it is reasonable to presume that this property is inherent to a mat from the combination of Jaffe and Arkens. Support for said presumption is found in the use of like materials (i.e. nonwoven mat formed in the same manner that includes glass fibers and polyester fibers, with a binder that prior to curing includes a polyacid and a polyol similar to the one claimed herein). The Examiner states that the burden is upon Applicant to prove otherwise. In re Fitzgerald 205 USPQ 594. In addition, the presently claimed property of wet tensile strength/dry tensile strength or air permeability would obviously have been present one the product form the combination of Jaffee and Arkens is provided. Reliance upon inherency is not improper even though rejection is based on Section 103 instead of Section 102. In re Skoner, et al. (CCPA) 186 USPQ 80.

l) With regards to the claimed property of passing the NFPA Method #701 Flammability Test, it is the Examiner's position that such property will also be inherent to the structure from the combination of Jaffee and Arkens et al. for the same reasons stated in the paragraph above.

## VII. ARGUMENTS:

### Introduction:

The claimed invention, fibrous nonwoven mats having particular compositions and properties, was developed to meet a new need in a relatively new product, folding dividers in compressible ceiling tile manufactured by a customer and described in U.S. Pub. Pat. Application 20020020142 filed in 2001 and published in 2002. A large amount of work was required to develop the claimed invention, more than 100 trials taking more than 54 days of experimentation as established by the Jaffee Rule 132 Declaration filed on August 23, 2006, paragraph No. 4a. The claimed invention is based on the discovery of a combination of mat properties, compositions and mat parameters for a mat that provides superior performance, after being scored and folded, to meet a new need as dividers 52, etc. in a unique compressible ceiling tile that is described in Published Pat. Application No. 2002/0020142 and also illustrated in Exhibit 1, the mat having properties, after scoring and folding, unexpected because of the lack of prior art teachings of a mat's ability to springback and having excellent tensile strength along with other properties, meeting all of the needs of this new application that prior art mats only partially met, i.e. marginally worked mechanically, but did not meet desired finished product specifications.

### A. The Examiner erred in rejecting claims 82-84, 91-94 and 99 35 USC 112, second paragraph, as being indefinite.

1) The Examiner states that it is improper to refer to a public record or something in a public record in a patent claim, and doing so makes the claim indefinite, but the Examiner, after being asked to provide basis for this conclusion, has provided nothing in the statute, Rules, MPEP or prior USPTO or Court decisions to support this position. The requirements of 35 USC 112, second paragraph requires that the claims "particularly point out and distinctly claim", and applicant believes the rejected claims meet this requirement for the reasons following below.



2) Claim 91 differs from claim 51, with respect to 35 USC 112, second paragraph, by further describing the recovery properties, "spring back", after scoring and folding as "suitable for use as a scored and folded fibrous mat in a compressible ceiling tile as disclosed in U.S. Published Patent Application No. 2002002142 filed April 23, 2001, because of the ability of the fibrous nonwoven mat, after being scored, folded and compressed, to spring back to the original shape and orientation". The Examiner did not reject claim 51 as being indefinite under 35 USC112, second paragraph. Applicants believe that because of this stated difference, the invention is even more particularly pointed out and more distinctly claimed than the invention of claim 51.

3) Because no standard test existed for the type of "spring back" properties needed for this new type of fibrous mat for this relatively new application and products, adding in a concise manner by referring to a readily available public document describing the type of environment the "spring back" properties or characteristics of the mats, dividers are working with and against adds to the understanding one of ordinary skill in fibrous mats obtains from the disclosure and claims, and therefore does not make the claims less definite than claims 51-64, etc.

4) The Examiner urges that a claim, by itself, should be a self-contained body that one of ordinary skill in the art should be able to understand based on its own substance, without needing guidance from a completely separate document. Applicants believe this conclusion by the Examiner is wrong because it has long been accepted and practiced to use shorthand terms and identifiers to incorporate or explain limitations in the claims. For example, it is common practice to identify properties of an article by an amount and a short hand reference to a separate document such as an ASTM and number or title of the test procedure, etc. In fact, all of the present claims contain such a shorthand reference to a separate document, the NFPA Method #701 Flammability Test - no objection or rejection of the claims, such as claims 51-64, was made on these claims under 35 USC 112.

Applicants believe that the Examiner erred in rejecting claims 82-84, 91-94 and 99 under 35 USC 112, second paragraph, and respectfully requests the Board of Appeals to reverse the Examiner.

**B. The Examiner erred in rejecting claims 51-64, 71-84, 91-94 and 99 under 35 USC 103 as being unpatentable over Jaffee '846 in view of Arkens et al because.**

1) Jaffee '876 leads one of ordinary skill in the art away from the claimed invention.

Jaffee teaches mats, and a method of making the mats, superior to prior art mats for facing gypsum wall board, the mats having improved flexibility compared to prior art mats (col. 2, lines 1-6 and col. 6, lines 20-23. Jaffee illustrates prior art mats he wants to improve on in Examples 1 and 2 in col. 5, neither of which are Jaffee's invention or have properties of his mats, see col. 5, lines 33-43 and 60-67. Thus Jaffee teaches away from the claimed invention, which have higher stiffness and a spring back characteristic. The Examiner refers sometimes to Example 2 of Jaffee, a **prior art mat - not a part of the Jaffee invention**, but this mat also has lower stiffness (45) and there is no reasonable suggestion that it would be suitable for scoring and folding or how doing so would affect its tensile strength. Note that the mat of Example 3 of Jaffee has a stiffness of only 33, significantly lower than the 37 and 45 of his **prior art control** Examples 1 and 2 respectively, and substantially below the stiffness on applicants' claimed mats, at least about 50. There is also no reasonable suggestion of changing the binder to the binder used in Example 3, or any other binder. Also note Jaffee's second Declaration, filed November 19, 2007, paragraphs Nos. 4 and 5 in which Jaffee declares that the mats of Jaffee '846's Examples 2 and 3 were not suitable for use in compressible ceiling tile because of insufficient stiffness and insufficient fire resistance and toxicity. Apparently, the Examiner has not commented on a second Declaration by Jaffee filed on November 19, 2007, stating that the mat disclosed in Example 2 of the Jaffee patent '846 was Johns Manville's Duraglass® 8802 mat, a mat mentioned in the U.S. Pub. App. No. 22020020142 mentioned in some of the claims, was unsuitable for a desired mat for use as scored and folded dividers in a commercial compressible ceiling tile because of undesirable properties, and that the mat disclosed in Example 3 of the was also had properties and characteristics that were unsuitable.

Jaffee also teaches that part of his objective are mats containing a major portion of glass fibers that can be pleated and thermoformed to a desired shape and then cooled to retain the formed shape (see col. 2, lines 10-15). Jaffee provides an example of doing so, Example 4, in which the mat, containing a latex binder TN 819 and TN 821 that could be "B" staged by drying to 250 degrees F. such that the binder remained in a thermoplastic stage. This mat was then heated and pleated (pleated by thermoforming and then cooled to retain the pleats) to make a pleated nonwoven for filter elements (col. 6, lines 51-64). This shape of pleated filter element is common, such as in the engine air filters of most automobiles. However, this teaching of Jaffee also leads one of ordinary

skill away from the claimed invention. Thermoforming is very different from scoring and folding and the two techniques produce completely different results. As taught by Jaffee above, thermoforming and cooling to retain the shape produces pleats that remain in the mat, i.e. the mat does not spring back as it does in the claimed mats. Nothing in Arkens et al teaches anything different.

In response to applicants' argument that the teachings of the Jaffee patent '846 actually leads one of ordinary skill away from the thickness and stiffness of the claimed invention, the Examiner responds by stating that Jaffee teaches that the mat may be of any basis weight and that the reason why one of ordinary skill in the art would have modified the Jaffee mat to make the claimed mat without destroying Jaffee's disclosed invention has been clearly articulated by the Examiner, however, Jaffee doesn't lead the skilled artisan towards the claimed invention, but away from it, and the Jaffee Declaration filed November 19, 2007, paragraphs Nos. 4 and 5 reveal that Jaffee declares that the mats of Jaffee '846's Examples 2 and 3 were not suitable for use in compressible ceiling tile

Applicants believe that the disclosure Jaffee '846 teaches away from the claimed invention and respectfully requests the Board of Appeals to reverse this rejection under 35 USC 103.

2) Neither Jaffee nor Arkens et al provide any guidance to one of ordinary skill in the art to make a nonwoven mat having unexpected excellent tensile strength, flex and recovery after scoring and folding and ---- because of the fibrous nonwoven mat having the ability, after being scored, folded and compressed, to spring back to the original shape and orientation.

There is no disclosure in Jaffee '846 or Arkens et al that would suggest to one of ordinary skill in the art that any of the mats disclosed in these references should or could be scored and folded to make a mat having the excellent tensile and spring back properties of the claimed mats. Furthermore, there is no disclosure in either of these references that would lead one of ordinary skill in the art to believe that modifying any of the mats disclosed in composition, basis weight and thickness to that of the claimed mats would produce mats having excellent tensile strength and spring back after scoring and folding.

Because of this lack of leading disclosure, and the actual disclosure leading away from the claimed invention, applicants believe that the disclosures of Jaffee and Arkens et al do not produce a prima facie obvious situation necessary for a 35 USC 103 rejection and respectfully request the Board of Appeals to reverse this rejection under 35 USC 103.

**3. The Examiner erred in concluding that the first Jaffee Declaration, that filed on August 23, 2006, did not provide evidence of non-obviousness because, in the opinion of the Examiner, more than 100 trials taking more than 54 days was not an unreasonable amount of trials and time for an investigator, like the inventor Jaffee, an expert in the art, to take to arrive at the claimed invention.**

The inventor of the rejected claimed invention, Jaffee, is the same Jaffee who was a co-inventor of the invention and disclosure in the Jaffee '846 patent. This certainly makes Jaffee an expert in the disclosure in the Jaffee '846 patent. Further, applicants believe that the credentials set out by Jaffee in his Declaration filed on August 23, 2006, paragraph 1 and his patents set out in Exhibit 1 qualify Jaffee as an expert in the field of nonwoven mats. In response to the Jaffee Declaration filed on August 23, 2006, the Examiner stated, "One hundred trials within 54 days to create an invention is not deemed excessive by the Examiner and does not contribute to a prima facie case of non-obviousness", and that applicants have failed to demonstrate why 100 trials taking 54 days is not within the reasonable limits of trial and error that any investigator would go through to arrive at a desirable end product. While it may be reasonable to conclude that it might take one of ordinary skill in the art to make **several** trials of something that is held obvious from the prior art, it is not only unreasonable, but probably incredulous to conclude that it would be reasonable to conclude that more than 100 trials taking more than 54 days is a reasonable effort for an expert in the field to take to arrive at what the Examiner concludes is obvious from the teachings of Jaffee '846 and Arkens et al.

For this reason, applicants believe the Examiner erred in holding that the evidence set out in paragraph 4 (a) of the Jaffee Declaration filed on August 23, 2006, did not

provide evidence of non-obviousness and respectfully requests the Board of Appeals to reverse the rejection of these claims under 35 USC 103.\_ \_

Respectfully submitted,



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Registration No. 34,032  
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Date: March 4, 2010

## VIII. Appendix - Claims

51. A fibrous nonwoven mat having a basis weight of 2.3 to about 2.6 lbs/100 sq. ft., a thickness in the range of about 38 to about 48 mils, high flame resistance and unexpected excellent tensile strength, flex and recovery properties after scoring and folding and being suitable for use as a scored and folded fibrous nonwoven mat for vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile because of the fibrous nonwoven mat having the ability, after being scored, folded, and compressed, to spring back to the original shape and orientation, the fibrous nonwoven mat comprising a blend of fibers comprising about 88 to about 92 weight percent chopped glass fibers having a diameter in the range of about 13 to about 17.5 microns and a length in the range of about 0.7 to about 1.1 inches and about 8 to about 12 percent man-made polymer fibers selected from the group consisting of polyester, polypropylene, nylon, PBT, polyacrylonitrile, and polybenzimidazole in the fibrous nonwoven mat, the blend of fibers in the being bound together by a binder that is at least partially cured and consists essentially of, before drying and curing, a homopolymer or a copolymer of polyacrylic acid and a polyol, with or without a polycarboxy polymer, the binder being present in the mat in an amount of about 25 +/- 5 wt. percent of the fibrous nonwoven mat, the fibrous nonwoven mat having a Taber Stiffness of at least about 50 gram centimeters and passing the National Fire Protection Association's (NFPA) Method #701 Flammability Test.

52. The mat according to claim 51, wherein the average molecular weight of the polyacrylic acid polymer is about 3,000 or less.

53. The mat according to claim 51, wherein the polyol is triethanolamine.

54. The mat according to claim 52, wherein the polyol is triethanolamine.

55. The mat of claim 51 wherein the man-made polymer fibers are polyester fibers.

56. The mat of claim 52 wherein the man-made polymer fibers are polyester fibers.

57. The mat of claim 53 wherein the man-made polymer fibers are polyester fibers.

58. The mat of claim 54 wherein the man-made polymer fibers are polyester fibers.

59. The mat of claim 51 wherein the binder content is in the range of about 25 to about 28 wt. percent.

60. The mat of claim 59 wherein the polymer fibers are polyester fibers and the glass fibers have an average fiber diameter in the range 16 +/- 1 micron.

61. The mat of claim 51 wherein the polymer fibers are polyester fibers about 1.5 denier and are about 0.25 +/- .07 inch long.

62. The mat of claim 52 wherein the polymer fibers are polyester fibers about 1.5 denier and are about 0.25 +/- .07 inch long.

63. (Previously presented) The mat of claim 54 wherein the wherein the polymer fibers are polyester fibers about 1.5 denier and are about 0.25 +/- .07 inch long.

64. The mat of claim 63 wherein the glass fibers have an average fiber diameter in the range 16 +/- 1 micron and the binder content is in the range of about 25 to about 28 wt. percent.

71. The mat of claim 51 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

72. The mat of claim 52 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

73. The mat of claim 53 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

74. The mat of claim 54 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

75. The mat of claim 55 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

76. The mat of claim 56 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

77. The mat of claim 57 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

78. The mat of claim 58 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

79. The mat of claim 59 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

80. The mat of claim 60 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

81. The mat of claim 61 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

82. The mat of claim 99 wherein the fiber content of the mat is about 90 wt. percent of glass fibers and about 10 wt. percent of polyester fibers, the binder content of the mat is about 25 wt. percent, the basis wt. of the mat is about 2.4 lbs./100 sq. ft. and the thickness of the mat is about 42 +/- 3.

83. The mat of claim 99 wherein the fiber content of the mat is about 88 wt. percent of glass fibers and about 12 wt. percent of polyester fibers, the binder content of the mat is about 25 wt. percent, the basis wt. of the mat is about 2.6 lbs./100 sq. ft. and the thickness of the mat is about 42 +/- 5 mils.

84. The mat of claim 99 wherein the fiber content of the mat is about 92 wt. percent of glass fibers and about 8 wt. percent of polyester fibers, the binder content of the mat is about 28 wt. percent, the basis wt. of the mat is about 2.3 lbs./100 sq. ft. and the thickness of the mat is about 40 +/- 5 mils.

91. A fibrous nonwoven mat having a basis weight in the range of 2.3 to about 2.6 lbs./100 sq. ft., a thickness in the range of about 38 to about 48 mils, a high flame resistance and unexpected tensile strength, flex and recovery properties after scoring and folding and suitable for use as a scored and folded fibrous nonwoven mat as vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile



as disclosed in published U. S. Published Patent Application No. 20020020142 filed April 23, 2001, because of the ability of the fibrous nonwoven mat, after being scored, folded, and compressed, to spring back to the original shape and orientation, the fibrous nonwoven mat comprised of a blend of fibers comprised of about 84 to about 92 wt. percent of chopped glass fibers having an average fiber diameter in the range of about 13 to about 17.5 microns and lengths within the range of about 0.7 and about 1.1 inches and about 8 to about 16 wt. percent of polyester fibers having a length of about 0.25 +/- 0.07 inch, the blend of fibers being bound together with about 20 to about 30 wt. percent, based on the dry weight of the fibrous nonwoven mat, of a cured resin consisting essentially of a resin derived from an aqueous homopolymer or copolymer of polyacrylic acid and a polyol, with or without a polycarboxy polymer, the fibrous nonwoven mat having a Taber Stiffness of at least about 50 gram centimeters and passing the National Fire Protection Association's (NFPA) Method #701 Flammability Test.

92. The mat of claim 91 wherein the average molecular weight of the polyacrylic acid polymer is about 3000 or less wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

93. The mat of claim 91 wherein the polyol is triethanolamine, the glass fibers have a diameter of about 16 +/- 1.5 microns and the mat has an air permeability in the range of about 500 – 700 CFM/sq. ft.

94. The mat of claim 92 wherein the polyol is triethanolamine, the glass fibers have a diameter of about 16 +/- 1.5 microns and the mat has an air permeability in the range of about 500 – 700 CFM/sq. ft.

99. A fibrous nonwoven mat having high flame resistance and unexpected tensile strength, flex and recovery properties after scoring and folding and suitable for use as the scored and folded fibrous nonwoven mat used for vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile as disclosed in published U. S. Published Patent Application No. 20020020142 filed April 23, 2001, because of the ability of the fibrous nonwoven mat, after being scored, folded, and compressed, to spring back to the original shape and orientation, the fibrous nonwoven mat comprised of a blend of fibers comprised of about 88 to about 92 wt. percent of chopped glass fibers having an average fiber diameter in the range of about 16 +/- 1 microns and a length of about 1 inch and about 8 to about 12 wt. percent of 1.5 denier polyester fibers having a length of about 0.25 +/- 0.07 inch, the blend of fibers being bound together with about 25

to about 28 wt. percent, based on the dry weight of the fibrous nonwoven mat, of a cured resin derived from an aqueous homopolymer or copolymer consisting essentially of polyacrylic acid and a polyol, with or without a polycarboxy polymer the average molecular weight of the polyacrylic acid polymer is about 3,000 or less, wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent, the mat passing the National Fire Protection Association's (NFPA) Method #701 Flammability Test, the mat having a Taber Stiffness of at least about 50 gram centimeters and the mat having an air permeability in the range of about 500 – 700 CFM/sq. ft., the nonwoven mat having a basis weight in the range of 2.3 to about 2.6 lbs/100 sq. ft and a thickness in the range of about 35 to about 48 mils.

## **IX. EVIDENCE APPENDIX**

The below items, copy of each attached, are additional evidence to teachings in the cited patents relied upon by applicant.

1. U.S. Published Patent Application No. 20020020142
2. Jaffee Declaration Under 37 CFR 1.132, filed August 23, 2006.
3. Jaffee Declaration Under 37 UFR 1.132, filed November 19, 2007.
4. Exhibit 1, filed June 20, 2007.

**X. RELATED PROCEEDINGS APPENDIX**

**NONE**

Filed 8/28/06

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Jaffee et al

Art Unit: 1771

Serial No. 10/718,007

Case Docket No. 7237

Filed: November 20, 2003

Examiner: Torres Velazquez, Norca Liz

For: **Method of Making Tough, Flexible Mats and Tough Flexible Mats**

Commissioner of Patents and Trademarks

Washington, D. C.

Dear Sir:

**DECLARATION UNDER 37 CFR 1.132**

I, Alan M. Jaffee, hereby declare that:

1. I received Bachelor of Science and Master of Science degrees in Chemical Engineering from the University of Toledo in 1977 and 1985, respectively. I have worked in the chemical industry since 1976 and have been employed by Johns Manville, Inc., Waterville, OH, since 1983, working in the area of sized glass fibers and fibrous nonwoven mats. For the last twenty-three (23) years my duties at Johns Manville have included the research, development, and application of glass fibers and non-woven products made therewith. I am currently a Technical Leader in the development of new fibrous nonwoven mats.

2. I am a joint inventor of the subject matter of the above-identified application Serial No. 10/718,007. I have read the application, and the Final Office Action mailed March 14, 2006, and the Advisory Action mailed June 12, 2006. I have also read the amended claims submitted with applicants' responses dated May 16, 2006.

3. I have read each of US Patent Application No. 2003/0109190 to Geel and US Patent Nos. 5,661,213 to Arkens et al and 4,888,235 to Chenoweth et al, which were cited in the March 14, 2006 Final Office Action.

4. I disagree with the Examiner's conclusion that the invention was obvious at the time it was made from the teachings of these references for the following reasons:

- a) I believe that my credentials stated above qualifies me to have more than ordinary skill in the art pertinent to the claimed invention of this application. I was familiar with the teachings on all three patents cited above in paragraph 3 above and these teachings did not make my invention obvious to me! Instead I made more than 100 trials of different types of glass fibers with and without various amounts of polymer fibers and/or different kinds of glass microfibers looking at different ratios of these combinations of fibers with different amounts of more than 7 different types of binders before I could find the claimed invention. These more than 100 trials took more than 54 days of experimentation and testing to find the claimed invention, a suitable range of compositions and mat parameters suitable for the scored and foldable mat for the vertical supports in the ceiling tile disclosed in U.S. Published Patent Application No. 20020020142.
- b) The products that the mats of the claimed invention were designed for are for ceiling tiles of the type disclosed in US. Pat. App. No. 2002020142 as pointed out in the specification. In that patent application, the mats that were said to perform as the dividers, i.e. the mats that have to be scored and folded and then have the properties that will cause the ceiling tile to spring back into the proper thickness after having been compressed for storing and shipping and storing awaiting use, were mats disclosed in three patents owned by the assignee of the present invention, particularly US 5,840,413 and 5,942,288. The mats taught in those patents contained expensive glass microfibers, i.e. having diameters below 5 microns, and bound with a melamine formaldehyde binder. The mats of the present invention do not require the presence of fine glass fibers to meet the requirements for the dividers in the ceiling tile and I believe this is an unexpected result of the combinations claimed.

c) The reasons that the Geel et al reference does not lead one skilled in the art to the claimed invention is because it would lead one skilled in the art AWAY from the claimed invention. Geel et al discloses a very broad range of compositions of mats for serving as a backing for a vinyl flooring product, not mats that must have a high Taber Stiffness or having unexpected excellent flex and recovery properties after scoring and folding. Geel et al makes no suggestion that his mat has the properties needed for use in ceiling panels of the type described in U.S. Published Patent Application No. 20020020142 and the mats of the claimed invention. Nor does Geel et al teach a mat composition even near that claimed in this application. Geel et al teaches applying a first binder in amounts of 5-35 wt. percent of the fibers in the formed web and then applying a second binder in amounts of an additional 10-30 wt. percent of the of the fibrous mat, amounting to almost 15-65 wt. percent of binder. If I had followed this teaching I would never have arrived at the invention because I would be trying to make a mat containing a combination of polyvinyl alcohol or acrylic or ethylene vinyl acetate or mixtures thereof, probably a mat containing in the neighborhood of about 25 – 40 wt. percent of glass fibers and about 60-75 wt. percent of PET fibers. Even if it would have been obvious to try the type of binder taught by Arkens et al as the secondary binder, I would not have arrived at the claimed invention because the mats of the claimed invention do not contain polyvinyl alcohol or acrylic or ethylene vinyl acetate or mixtures thereof – no where does Geel et al suggest that his primary binder is not necessary.

d) The Examiner states that no weight is given to the mat properties, seemingly stating that any mat in the mats falling within the fiber and binder composition ranges taught by Geel, but modified by using binder taught by Arkens et al will inherently have the properties of the claimed mats i.e. applies the flex properties following scoring and folding, the flammability test results, the Taber Stiffness and the ratio of wet tensile to dry tensile strengths. This allegation is incorrect as demonstrated by several trials included in the more than 100 trials I ran and mentioned above. For example, the following trials produced mats having a Taber Stiffness of less than 20.

- i) Trial designated 03160C, a mat containing fibers consisting of 85 percent M (15-16 micron diameter) glass fibers 1 inch long and 15 percent 1/4 inch long 1.5 denier PET fibers. The mat contained 23 wt. percent of a melamine formaldehyde binder, a binder that bonding effect at a temperature of from about 80-200 degrees C. as Geel et al teaches. The mat had a basis weight of 2.24 lbs./100 sq. ft. and a thickness of about 38.5 mils. However, the Taber Stiffness of this mat was only 32.1, substantially outside the limits of the mats of the claimed invention.
- ii) Trial designated 04213a, a mat containing fibers consisting of 86.9 wt. percent 12 mm long, H117 fibers (9-10 microns diameter) and 13.1 wt. percent 6 mm long polyester (PET) fibers of 1.5 denier and 24 wt. percent of Type 82 binder, the binder described in the claimed invention. The mat had a basis weight of 1.08 lbs/100 sq. ft. and a thickness of 19.5 mils. The mat was wet laid, the binder added in an aqueous mixture and the wet mat was dried and cured at a temperature of about 121 degrees C. for 120 seconds. The Tabor Stiffness of the resultant mat was only about 18, substantially outside the level of the mats of the claimed invention.
- iii) Trial designated 02122a was a mat containing fibers consisting of about 81 wt. percent 12 mm long, H117 fibers (9-10 microns diameter) and about 19 wt. percent 6 mm long polyester (PET) fibers of 1.5 denier and 24 wt. percent of Type 82 binder, the binder described in the claimed invention. The mat had a basis weight of 1.08 lbs/100 sq. ft. and a thickness of 19.5 mils. The mat was wet laid, the binder added in an aqueous mixture and the wet mat was dried and cured at a temperature of about 120 degrees C. for 120 seconds. The Taber Stiffness of the resultant mat was only about 14, substantially outside the level of the mats of the claimed invention.



e) The disclosure of Chenoweth et al adds nothing of any value because Chenoweth et al also lead one skilled in the art away from the claimed invention in the following ways:

i) The fibers taught by Chenoweth, rotary spun fibers having a diameter of 3-10 microns are a totally different type of fiber than the chopped continuous glass fibers used in the claimed invention and would not produce the properties needed for the ceiling tiles of the type disclosed in US. Pat. App. No. 2002020142 because due to the type of fiber and the small fiber diameter the Taber Stiffness required would not be achieved based on what I have learned in the more than 100 trials I have run. Further, based on my actual experience of trying to use rotary spun glass fibers of the size and type taught by Chenoweth et al to make NOWOVEN MATS, a brashy, weak mat would result that would be totally unacceptable for the ceiling tile described above.

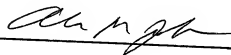
ii) The fiber ratios in Table I lead away from the claimed invention, note that the ratio of glass fibers to synthetic fibers is 33-90 : 30-50 resulting in a composition of fibers in the mat being, at the most, three times as much glass fiber as synthetic fiber. This is clearly substantially outside my claimed invention requiring at least 5-6 times as much 13-17 micron glass fiber as polymer fiber and up to about 8-9 times as much.

iii) Chenoweth teaches a different type of product, an insulating blanket having a thickness of about 1-3 inches. While the reference teaches that thicker or thinner blankets can be produced, one skilled in the art will readily recognize that Chenoweth did not teach making a nonwoven fibrous mat having a thickness of 43 +/- 5 mils, 0.038-0.048 inches, a distinctly different type of product.

f) While Arkens et al is pertinent to the binder in the claimed invention, the Arkens et al disclosure does not suggest the claimed invention and does not change the direction of the teachings of Geel et al or of Chenoweth et al.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signed: \_\_\_\_\_



Alan M. Jaffee  
822 Touraine Ave.  
Bowling Green, OH 43402

Date: \_\_\_\_\_

8/21/06

Filed No V. 19, 2008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Jaffee et al

Art Unit: 1771

Serial No. 10/718,007

Case Docket No. 7237

Filed: November 20, 2003

Examiner: Matzek, Matthew D.

For: **Method of Making Tough, Flexible Mats and Tough Flexible Mats**

Commissioner of Patents and Trademarks  
Washington, D. C.

Dear Sir:

**DECLARATION UNDER 37 CFR 1.132**

I, Alan M. Jaffee, hereby declare that:

1. I received Bachelor of Science and Master of Science degrees in Chemical Engineering from the University of Toledo in 1977 and 1985, respectively. I have worked in the chemical industry since 1976 and have been employed by Johns Manville, Inc., at the Waterville, OH, facilities since 1983, working in the area of sized glass fibers and fibrous nonwoven mats. For the last twenty-five (25) years my duties at Johns Manville have included the research, development, and application of glass fibers and non-woven products made therewith. I am currently the Principal Technical Advisor in the development of new fibrous nonwoven mats.
2. I am a joint inventor of the subject matter of the above-identified application, Serial No. 10/718,007, filed November 20, 2003.
3. I am also the inventor of the invention disclosed in U.S. Patent 5,772,846, and state that the stiffness data shown in Examples 1, 2 and 3 and in the Table were determined using the Taber Stiffness Test and that this data is Taber Stiffness. This Taber Stiffness Test is the same test used to determine the

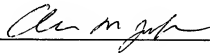
stiffness data presented in the above-identified application, Serial No. 10/718,007, filed November 20, 2003.

4. Example 2 in U.S. Patent 5,772,846 was Johns Manville's commercial mat product designated by Johns Manville as Duraglass® 8802 mat. This Duraglass® 8802 mat is unsuitable for the collapsible web of the compressible ceiling tiles disclosed in U. S. Published Patent Application No. 20020020142 filed April 23, 2001, because of insufficient stiffness and because it doesn't pass the National Fire Protection Association's (NFPA) Method #701 Flammability Test.

5. Example 3 and the other mats of the invention disclosed in U.S. Patent 5,772,846 are also unsuitable for the collapsible web of the compressible ceiling tiles disclosed in U. S. Published Patent Application No. 20020020142 filed April 23, 2001, because of insufficient stiffness and because the smoke toxicity upon burning of the PVC binder in the mat was unacceptable.

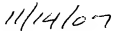
6. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signed: \_\_\_\_\_



Alan M. Jaffee  
822 Touraine Ave.  
Bowling Green, OH 43402

Date: \_\_\_\_\_



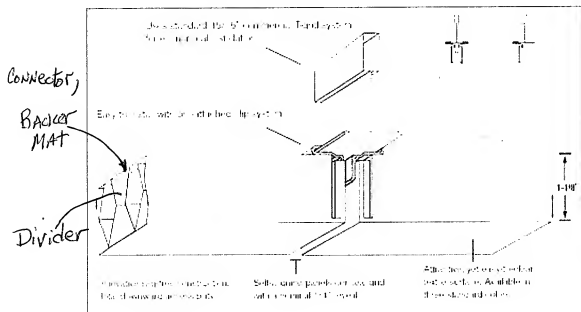
## HunterDouglas

## Ceilings

Global &gt; United States &gt; Ceilings &gt; Techstyle Acoustical Solutions &gt; Classic Series

## Construction Details

Techstyle Acoustical Ceilings Classic Series



## CHARACTERISTICS

Substrate	Acoustical mat
Surface finish	Polyester Non-woven material
Panel Thickness	1 1/8"
Panel Sizes	24"x24" 30"x30" 48"x 48" 24"x48" 30"x60" 48"x 60" 24"x60" 48"x 72" 24"x72"
Material/sqm	Approx 1/4 lb / SF
Light Reflectance	LR-1 (77%) (ASTM E 1477) (White only)
Weight of Panel	0.30 pounds per square foot

- Clean, Drywall-like Appearance
- Large panel sizes
- Outstanding acoustical performance
- Easy downward accessibility
- Narrow 1/4" reveal
- Economical installation on standard 15/16" T-grid
- Innovative sag-free construction
- Accommodates standard fixtures